doping of the first type with a lower doping concentration than that of the first plug; a second plug laterally surrounding the first plug, the second plug having a doping of a second type different from the first type; a first region disposed in a top portion of the first well and electrically coupled to the first node, the first region having a doping of the second type with a higher doping concentration than that of the second plug, wherein the first region disposed in a top portion of the first well and at least in a portion of a top portion of the first plug; and a second region disposed in a top portion of the second plug, and electrically coupled to the second node, the second region having a doping of the second type with a higher doping concentration than that of the second plug.

[0011] In yet another embodiment, an apparatus includes: an internal circuit electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes: a buried layer having a doping of a first type; a first plug overlying the buried layer, and having a doping of the first type with a higher doping concentration than that of the buried layer, the first plug having an annular shape when viewed from above; a first well overlying the buried layer, and laterally surrounded by the first plug, the first well having a doping of the first type with a lower doping concentration than that of the first plug; a second plug laterally surrounding the first plug, the second plug having a doping of a second type different from the first type; a first region disposed in a top portion of the first well, the first region having a doping of the second type with a higher doping concentration than that of the second plug; and a second region disposed in a top portion of the second plug, and electrically coupled to the second node, the second region having a doping of the second type with a higher doping concentration than that of the second plug; a first resistor electrically coupled between the first region and the first node; and a second resistor electrically coupled to the first plug.

[0012] In yet another embodiment, an apparatus includes: an internal circuit, electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes: a silicon-controlled rectifier (SCR) having an anode, a gate, and a cathode, wherein the anode is electrically coupled to the first node, and the cathode is electrically coupled to the second node; and a diode array comprising a plurality of diodes connected in series between the gate and the anode of the silicon-controlled rectifier and arranged such that the diodes conduct a current into the SCR to turn on the SCR when the diodes break down.

[0013] In yet another embodiment, an apparatus includes: an internal circuit electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes: a silicon-controlled rectifier (SCR) having an anode, a gate, and a cathode, wherein the anode is electrically coupled to the first node, and the cathode is electrically coupled to the second node; and a resistor electrically coupled between the gate and the cathode of the SCR.

[0014] In yet another embodiment, an apparatus includes: an internal circuit electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes a silicon-controlled rectifier (SCR) having an anode, a gate, and a cathode, wherein the anode is electrically coupled to the first node, and the cathode is electrically coupled to the second node. The SCR includes: a substrate having a doping of a first type; a first well disposed in a first upper portion of the substrate, and having a doping of a second type different from the first type; a second well disposed in a second upper portion of the substrate, and spaced apart laterally from the first well such that a third upper portion of the substrate is laterally interposed between the first and second wells, the second well having a doping of the second type, the third upper portion having a doping of the first type; a first region disposed in a top portion of the first well, and having a doping of the second type with a higher doping concentration than that of the first well, the first region being electrically coupled to the second node; a second region disposed in a top portion of the second well, and having a doping of the second type with a higher doping concentration than that of the second well; a third region disposed in the first well adjacent to the first region such that the third region is interposed laterally between the first region and the third upper portion of the substrate, the third region having a doping of the first type with a higher doping concentration than that of the substrate; a fourth region disposed in the second well adjacent to the second region such that the fourth region is interposed laterally between the second region and the third upper portion of the substrate, the fourth region having a doping of the first type with a higher doping concentration than that of the substrate, the fourth region being electrically coupled to the first node; and a gate contact disposed on the third upper portion of the substrate. The third region has a lateral dimension extending in a direction from the first region toward the third upper portion of the substrate, and the lateral dimension of the third region is greater than the lateral dimension of the first region in the direction.

[0015] In yet another embodiment, an apparatus includes: an internal circuit electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes: a silicon-controlled rectifier (SCR) having an anode, a gate, and a cathode, wherein the anode is electrically coupled to the first node; a first resistor electrically coupled between the cathode of the SCR and the second node; and a second resistor electrically coupled to the gate of the SCR.

[0016] In yet another embodiment, an apparatus includes: an internal circuit electrically coupled between a first node and a second node; and a protection device electrically coupled between the first node and the second node, wherein the protection device is configured to protect the internal circuit from transient electrical events. The protection device includes: a bipolar device having a first terminal, a second terminal, and a third terminal, wherein the first terminal is electrically coupled to the first node, and the third terminal is electrically coupled to the second node; an impedance block electrically coupled between the second terminal of the bipolar device and a first voltage reference, wherein the imped-